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THE INDUSTRIAL ENGINEERING DEPARTMENT

And Its Purposes

By PROF. JOHN YOUNGER

THE work of this department will deal with the five fundamental elements of engineering—materials, stresses, mechanisms, costs, and finally the organization or human side. A knowledge of all these is necessary to the eventual executive. Manufacturing today is a complex process, and the manager who is not literally saturated with a broad knowledge of engineering principles can hardly be expected to be as successful as one who only understands his work and the detail of it in a superficial way.

Formerly it was sufficient to hand a drawing or blue print over to a workman, and tell him to make the piece as shown in the picture. No other instructions were given — merely "Make the piece." Today the situation is vastly different, at least in manufacturing establishments. Most such shops, even small ones, have either a complete planning department or at least the semblance of one. Work today is thought about, planned for, carefully considered and scrutinized in all its aspects and when the workman is handed the job, he is told what tools he is to use, what jigs and fixtures, what particular machine the work is to be done on, the number of pieces, the clearances and tolerances, and finally where to send the work when it is completed. Materials, instructions, and so forth are all provided for him. The workman is no longer a Jack of all trades, but is a specialist responsible for only a small part of the total operations. His thinking is largely done for him and it is this thinking process that the student of industrial engineering will become familiar with.

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Competition is keen today and the student with the best equipment of thinking brains will have a better chance in the struggle for existence. Students will be shown how work should be studied, to find out for example how it can be made, in what time it can be made, and at what cost it can be made. His instruction in the fundamental elements of engineering will teach him to consider if it can be made in a different way so that its functions will be performed as satisfactorily or even better and perhaps at lower cost. Students will be taught the principles underlying the six questions: How to do a piece of work; when to do it; why should it be done; where to do it; what to do it with, and finally another "what"—What will it cost.

Competition is also keen today, not only among the workers but among the firms employing them. The company which estimates on a job or class of job, must know all the factors that enter into the work before they can quote intelligently. At the risk of stressing the word "fundamental," it is worth repeating that students will benefit by a knowledge of the fundamentals that enter into an accurate piece of estimating work. The industrial engineering department will seek to instill such a knowledge.

Don't let us forget another important factor and that is the one of quality or accuracy. There is a slight difference between the two words. The job which is accurate need not necessarily be of good quality, but the job that is of best quality must always be accurate. Quality and accuracy will be stressed in the laboratory work which will form a very important part of the course. Students must not only learn the theory of their work, but in such essentially practical work as industrial engineering, they must also learn the practice by actual experience.

Today more and more stress is laid upon the necessity for not only cooperation between engineering departments but also for coordination. The designing engineer has too long been kept separate from the production engineer. It will be the aim of industrial engineering courses to show how this cooperation and coordination can be effected in industrial organizations. The design of the product will be considered, and with it will go a study of jigs, tools and fixtures and the machine tools, and further the engineering problems entering into the planning of the work. Such problems as standardization and simplification, inspection and salvaging, and waste elimination are all engineering problems for serious study.

In all the courses will be designed to fit students so that when they enter practical work they will have an understanding of the organization problems with which they will be surrounded in addition to an understanding of the engineering problems. By being so equipped he will be the better fitted to take his place in line for eventual promotions to executive positions.